

SGCN and Conservation Actions Associated with Habitat Groupings

Habitat Grouping: Intertidal

Macrogroup Intertidal Mudflat

- Habitat System Freshwater Tidal Marsh
- Habitat System Non-Vascular Mudflat
- Habitat System Submerged Aquatic Vegetation

Macrogroup Intertidal Sandy Shore

- Habitat System Sand Beach
- Habitat System Sand Flat
- Habitat System Submerged Aquatic Vegetation

Macrogroup Intertidal Mollusc Reefs

- Habitat System Gastropod Reef
- Habitat System Mussel Reef
- Habitat System Oyster Reef

Macrogroup Intertidal Bedrock

- Habitat System High Intertidal
- Habitat System Low-Intertidal
- Habitat System Mid-Intertidal

Macrogroup Intertidal Gravel Shore

- Habitat System High Intertidal
- Habitat System Lower Intertidal
- Habitat System Mid-Intertidal

Macrogroup Intertidal Water Column

- Habitat System Confined Channel
- Habitat System Embayment
- Habitat System Exposed Shore

Species Associated with this Grouping Total SGCN: 1: 14 2: 26 3: 10 Total SGCN (primary habitat): 1: 10 2: 16 3: 5

Class	<i>Actinopterygii</i> (Ray-finned Fishes)	SGCN Category
Species	<i>Acipenser brevirostrum</i> (Shortnose Sturgeon)	1
Species	<i>Acipenser oxyrinchus</i> (Atlantic Sturgeon)	1
Species	<i>Alosa aestivalis</i> (Blueback Herring)	1
Species	<i>Alosa pseudoharengus</i> (Alewife)	2
Species	<i>Alosa sapidissima</i> (American Shad)	1
Species	<i>Ammodytes americanus</i> (American Sand Lance)	3
Species	<i>Anguilla rostrata</i> (American Eel)	2
Species	<i>Esox americanus americanus</i> (Redfin Pickerel)	2
Species	<i>Morone saxatilis</i> (Striped Bass)	2
Species	<i>Osmerus mordax</i> (Rainbow Smelt)	1
Species	<i>Salmo salar</i> (Atlantic Salmon)	1
Species	<i>Salvelinus fontinalis</i> (Brook Trout)	3

Class	<i>Asteroidea</i> (Sea Stars)	SGCN Category
Species	<i>Asterias forbesi</i> (Forbes's Starfish)	2
Species	<i>Asterias rubens</i> (Common Sea Star)	2
Species	<i>Crossaster papposus</i> (Common Sun Star)	2
Species	<i>Stephanasterias albula</i> (White Sea Star)	2

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Class	Aves (Birds)	SGCN Category
Species	<i>Ardea herodias</i> (Great Blue Heron)	2
Species	<i>Arenaria interpres</i> (Ruddy Turnstone)	2
Species	<i>Aythya marila</i> (Greater Scaup)	2
Species	<i>Bucephala islandica</i> (Barrow's Goldeneye)	1
Species	<i>Calidris alba</i> (Sanderling)	2
Species	<i>Calidris canutus rufa</i> (Red Knot)	1
Species	<i>Calidris maritima</i> (Purple Sandpiper)	1
Species	<i>Calidris pusilla</i> (Semipalmated Sandpiper)	2
Species	<i>Charadrius melodus</i> (Piping Plover)	1
Species	<i>Egretta caerulea</i> (Little Blue Heron)	3
Species	<i>Egretta thula</i> (Snowy Egret)	3
Species	<i>Histrionicus histrionicus</i> (Harlequin Duck)	1
Species	<i>Numenius phaeopus</i> (Whimbrel)	2
Species	<i>Nycticorax nycticorax</i> (Black-crowned Night-heron)	2
Species	<i>Sternula antillarum</i> (Least Tern)	1
Species	<i>Tringa flavipes</i> (Lesser Yellowlegs)	1
Class	Bivalvia (Marine And Freshwater Molluscs)	SGCN Category
Species	<i>Crassostrea virginica</i> (Eastern Oyster)	3
Species	<i>Mercenaria mercenaria</i> (Hard-shelled Clam)	3
Species	<i>Mya arenaria</i> (Softshell Clam)	3
Species	<i>Mytilus edulis</i> (Blue Mussel)	3
Species	<i>Zirfaea crispata</i> (Atlantic Great Piddock)	2
Class	Chondrichthyes (Sharks, Rays, And Skates)	SGCN Category
Species	<i>Sphyrna zygaena</i> (Smooth Hammerhead)	3
Class	Echinoidea (Sea Urchins)	SGCN Category
Species	<i>Strongylocentrotus droebachiensis</i> (Green Sea Urchin)	2
Class	Gastropoda (Aquatic And Terrestrial Snails)	SGCN Category
Species	<i>Boreotrophon clathratus</i> (Clathrate Trophon)	2
Species	<i>Boreotrophon truncatus</i> (Murex)	2
Species	<i>Colus pygmaeus</i> (Colus Snail)	2
Species	<i>Floridobia winkleyi</i> (New England Silt Snail)	3
Class	Holothuroidea (Sea Cucumbers)	SGCN Category
Species	<i>Cucumaria frondosa</i> (Orange-footed Sea Cucumber)	2
Species	<i>Psolus fabricii</i> (Psolus)	2
Species	<i>Psolus phantapus</i> (Psolus)	2
Species	<i>Thyonidium drummondii</i> (Sea Cucumber)	2
Class	Merostomata (Horseshoe Crabs And Sea Scorpions)	SGCN Category
Species	<i>Limulus polyphemus</i> (Horseshoe Crab)	1

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Class	<i>Ophiuroidea</i> (Brittle Stars)	SGCN Category
Species	<i>Gorgonocephalus arcticus</i> (Northern Basket Starfish)	2
Class	<i>Rhynchonellata</i> (Brachiopods)	SGCN Category
Species	<i>Terebratulina septentrionalis</i> (Lamp Shell)	2

Habitat Stressors:

Habitat-specific stressors are assigned to the Habitat Macrogroup(s) listed in the Habitat Grouping above. Habitat Macrogroup reports can be found in Maine's 2015 Wildlife Action Plan: Element 2, Table 2-3. Click on the Habitat Macrogroup of interest to launch a habitat based report summarizing relevant stressors and associated SGCN.

Conservation Actions Assigned to this Habitat Grouping:

Conservation Action	Category: Habitat Management	Biological Priority: critical	Type: new
Find ways to support culvert replacement in or near intertidal, subtidal, and tidal marsh habitats using best management practices			
Stressor(s) Addressed By This Conservation Action			
Utility and Service Lines, Shipping Lanes, Roads and Railroads, Dams and Water Management-Use			
Conservation Action	Category: Habitat Management	Biological Priority: critical	Type: on-going
Encourage partnership projects among transportation agencies, utility companies, etc. to facilitate fish passage and maintain connectivity in or near subtidal, intertidal, and tidal marsh habitats especially in cases where structures have different purposes for different users			
Stressor(s) Addressed By This Conservation Action			
Dams and Water Management-Use, Roads and Railroads, Shipping Lanes, Utility and Service Lines			
Conservation Action	Category: Habitat Management	Biological Priority: critical	Type: on-going
Decommission remnant or unused roads and other structures in or near tidal marsh, intertidal, and subtidal habitats			
Stressor(s) Addressed By This Conservation Action			
Utility and Service Lines, Dams and Water Management-Use, Roads and Railroads, Shipping Lanes			
Conservation Action	Category: Habitat Management	Biological Priority: high	Type: on-going
Promote voluntary baywide (or scale of ecological relevance) coordination of shared resources and education addressing the impacts of fishing and harvesting aquatic resources on SGCN intertidal and subtidal habitats			
Stressor(s) Addressed By This Conservation Action			
Fishing and Harvesting of Aquatic Resources			
Conservation Action	Category: Habitat Management	Biological Priority: high	Type: on-going
Restore and improve conservation management at state and municipal levels to reduce impacts of effluents and wastewater or intertidal and subtidal SGCN habitats			
Stressor(s) Addressed By This Conservation Action			
Industrial and Military Effluents, Agricultural and Forestry Effluents, Domestic and Urban Waste Water			
Conservation Action	Category: Habitat Management	Biological Priority: high	Type: on-going
Mitigate coastal acidification of intertidal and subtidal habitats using strategies similar to those for reducing effects of effluents/wastewater			
Stressor(s) Addressed By This Conservation Action			
Temperature Extremes, Habitat Shifting or Alteration, Storms and Flooding			
Conservation Action	Category: Habitat Management	Biological Priority: high	Type: on-going
Use technology to reduce discharge of wastewater and effluents into intertidal and subtidal SGCN habitats			

SGCN and Conservation Actions Associated with Habitat Groupings

Habitat Grouping: Intertidal

Stressor(s) Addressed By This Conservation Action

Domestic and Urban Waste Water, Agricultural and Forestry Effluents, Industrial and Military Effluents

Conservation Action	Category: Habitat Management	Biological Priority: high	Type: on-going
Investigate the effects of commercial trawling within the intertidal zone.			

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action	Category: Habitat Management	Biological Priority: high	Type: on-going
Assess new aquaculture sites for potential positive, benign, or negative species interactions with the surrounding habitat and ecological systems			

Stressor(s) Addressed By This Conservation Action

Marine and Freshwater Aquaculture

Conservation Action	Category: Habitat Management	Biological Priority: high	Type: on-going
Increase riparian and coastal buffer zones by limiting development in these areas to minimize damage to these properties due to flooding/waves and to maintain pervious surfaces for improved water management			

Stressor(s) Addressed By This Conservation Action

Habitat Shifting or Alteration, Storms and Flooding, Temperature Extremes

Conservation Action	Category: Habitat Management	Biological Priority: moderate	Type: new
Increase pH of mudflats (e.g., using harvested shell waste) to restore more favorable habitat conditions for intertidal and subtidal SGCN			

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action	Category: Habitat Management	Biological Priority: moderate	Type: new
Alter shipping lanes and dredging plans in intertidal and subtidal habitats to minimize biological and ecological impacts to SGCN			

Stressor(s) Addressed By This Conservation Action

Agricultural and Forestry Effluents, Domestic and Urban Waste Water, Industrial and Military Effluents

Conservation Action	Category: Habitat Management	Biological Priority: moderate	Type: on-going
Conduct training and workshops to support knowledge of SGCN and their habitats			

Stressor(s) Addressed By This Conservation Action

Recreational Activities

Conservation Action	Category: Habitat Management	Biological Priority: moderate	Type: on-going
Improve response plans for industrial spills (e.g., oil spills) in intertidal and subtidal habitats and support research on oil dispersants and short and long term effect of oil spills			

Stressor(s) Addressed By This Conservation Action

Industrial and Military Effluents, Agricultural and Forestry Effluents, Domestic and Urban Waste Water

Conservation Action	Category: Policy	Biological Priority: high	Type: new
Provide incentives for building Stream Smart structures and road crossings in or near intertidal, subtidal, and tidal marsh habitats that allow for changing environmental conditions such as sea level rise and increased flooding			

Stressor(s) Addressed By This Conservation Action

Utility and Service Lines, Shipping Lanes, Roads and Railroads, Dams and Water Management-Use

Conservation Action	Category: Policy	Biological Priority: high	Type: on-going
Increase enforcement for dumping/litter/gear abandonment in intertidal and subtidal habitats			

Stressor(s) Addressed By This Conservation Action

Garbage and Solid Waste

SGCN and Conservation Actions Associated with Habitat Groupings

Habitat Grouping: Intertidal

Conservation Action	Category: Policy	Biological Priority: high	Type: on-going
Increase awareness about invasive species and problems following the introduction of invasive species in the shipping, transportation, and other industries to prevent introductions and spread of invasive species in intertidal and subtidal habitats			
Stressor(s) Addressed By This Conservation Action			
Viral-Prion-induced Diseases, Problematic Native Species-Diseases, Invasive Non-native-Alien Species-Diseases			
Conservation Action	Category: Policy	Biological Priority: high	Type: on-going
Increase capacity for enforcement of current laws and regulations regarding proper infrastructure (e.g., roads, dams, utility lines, shipping lanes) construction, maintenance, water quality, and fish passage in tidal marsh, intertidal, and subtidal SGCN habitats			
Stressor(s) Addressed By This Conservation Action			
Dams and Water Management-Use, Roads and Railroads, Shipping Lanes, Utility and Service Lines			
Conservation Action	Category: Policy	Biological Priority: moderate	Type: new
Explore value of utilizing conservation leases to limit uses/stresses in intertidal and subtidal habitats			
Stressor(s) Addressed By This Conservation Action			
Fishing and Harvesting of Aquatic Resources			
Conservation Action	Category: Policy	Biological Priority: moderate	Type: new
Update permit requirements for new and retrofitted developments in, near, or adjacent to intertidal habitats with up-to-date data/models of climate predictions			
Stressor(s) Addressed By This Conservation Action			
Commercial and Industrial Areas , Housing and Urban Areas, Livestock Farming and Ranching			
Conservation Action	Category: Policy	Biological Priority: moderate	Type: on-going
Expand existing education and incentive programs for lawn care companies, homeowners, and municipalities to reduce wastewater and effluent inputs and effects on intertidal and subtidal SGCN habitats			
Stressor(s) Addressed By This Conservation Action			
Industrial and Military Effluents, Agricultural and Forestry Effluents, Domestic and Urban Waste Water			
Conservation Action	Category: Policy	Biological Priority: moderate	Type: on-going
Increase capacity for municipal planning to reduce wastewater and effluent effects on intertidal and subtidal SGCN habitats while also accounting for future environmental change			
Stressor(s) Addressed By This Conservation Action			
Industrial and Military Effluents, Agricultural and Forestry Effluents, Domestic and Urban Waste Water			
Conservation Action	Category: Policy	Biological Priority: moderate	Type: on-going
Provide incentives for and education on using green infrastructure for preventing erosion and loss/damage of property near intertidal habitats			
Stressor(s) Addressed By This Conservation Action			
Housing and Urban Areas, Livestock Farming and Ranching, Commercial and Industrial Areas			
Conservation Action	Category: Policy	Biological Priority: moderate	Type: on-going
Retrofit existing effluent and wastewater treatment infrastructure and plan for sea level rise by providing economic incentives and education			
Stressor(s) Addressed By This Conservation Action			
Industrial and Military Effluents, Agricultural and Forestry Effluents, Domestic and Urban Waste Water			
Conservation Action	Category: Policy	Biological Priority: moderate	Type: on-going
Provide stewardship/conservation incentives to harvesters working in intertidal and subtidal SGCN habitats			

SGCN and Conservation Actions Associated with Habitat Groupings

Habitat Grouping: Intertidal

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action	Category: Public Outreach	Biological Priority: high	Type: new
Improve knowledge of effects of renewable energy on intertidal and subtidal SGCN habitats			

Stressor(s) Addressed By This Conservation Action

Renewable Energy

Conservation Action	Category: Public Outreach	Biological Priority: high	Type: on-going
Continue/expand litter reduction programs/public education in intertidal and subtidal habitats			

Stressor(s) Addressed By This Conservation Action

Garbage and Solid Waste

Conservation Action	Category: Public Outreach	Biological Priority: high	Type: on-going
Continue/expand marine debris recovery programs in intertidal and subtidal habitats and education to fishermen			

Stressor(s) Addressed By This Conservation Action

Garbage and Solid Waste

Conservation Action	Category: Public Outreach	Biological Priority: high	Type: on-going
Provide education and outreach through local meetings and trainings (e.g., Stream Smart) on techniques, problems and ecological effects of dams, roads, shipping lanes, and utility corridors on intertidal, subtidal, and tidal marsh habitats and publicize completed projects			

Stressor(s) Addressed By This Conservation Action

Utility and Service Lines, Shipping Lanes, Roads and Railroads, Dams and Water Management-Use

Conservation Action	Category: Public Outreach	Biological Priority: high	Type: on-going
Increase outreach and education on preventing the spread of invasive/problematic species and diseases in intertidal, subtidal, and tidal marsh habitats			

Stressor(s) Addressed By This Conservation Action

Problematic Native Species-Diseases, Invasive Non-native-Alien Species-Diseases, Viral-Prion-induced Diseases

Conservation Action	Category: Public Outreach	Biological Priority: high	Type: on-going
Increase capacity for local engagement in data collection, surveys, and management of intertidal and subtidal SGCN and their habitats that fosters partnerships among harvesters, citizens, scientists, and managers			

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action	Category: Public Outreach	Biological Priority: high	Type: on-going
Increase leadership opportunities and education regarding climate change mitigation and adaptation in intertidal and subtidal habitats			

Stressor(s) Addressed By This Conservation Action

Habitat Shifting or Alteration, Storms and Flooding, Temperature Extremes

Conservation Action	Category: Public Outreach	Biological Priority: moderate	Type: new
Develop best management practices for maintaining energy facilities in intertidal and subtidal habitats			

Stressor(s) Addressed By This Conservation Action

Renewable Energy

Conservation Action	Category: Public Outreach	Biological Priority: moderate	Type: new
Expand existing education and research at the management level to improve understanding and management ability to reduce wastewater and effluent inputs and effects into intertidal and subtidal SGCN habitats			

SGCN and Conservation Actions Associated with Habitat Groupings

Habitat Grouping: Intertidal

Stressor(s) Addressed By This Conservation Action

Industrial and Military Effluents, Agricultural and Forestry Effluents, Domestic and Urban Waste Water

Conservation Action **Category:** Public Outreach **Biological Priority:** moderate **Type:** on-going

At popular sites, increase education and outreach on the effects of recreation on sensitive intertidal ecosystems, spread of invasive species, etc.

Stressor(s) Addressed By This Conservation Action

Recreational Activities

Conservation Action **Category:** Public Outreach **Biological Priority:** moderate **Type:** on-going

Post signs describing specific usage constraints (e.g. avoid certain areas during breeding seasons, pick up dog waste, don't disturb flora and fauna) to minimize impacts of recreational activities on intertidal SGCN habitats

Stressor(s) Addressed By This Conservation Action

Recreational Activities

Conservation Action **Category:** Public Outreach **Biological Priority:** moderate **Type:** on-going

Promote use of more targeted fishing techniques in intertidal and subtidal habitats (e.g., bycatch reduction and not disturbing habitat) by encouraging discussions between harvesters, ecologists, and managers

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action **Category:** Research **Biological Priority:** critical **Type:** new

Create a coastal acidification budget to determine which factors (i.e. point, non-point source pollution, atmospheric CO₂, etc.) are most important in driving acidification nearshore in intertidal and subtidal habitats

Stressor(s) Addressed By This Conservation Action

Temperature Extremes, Habitat Shifting or Alteration, Storms and Flooding

Conservation Action **Category:** Research **Biological Priority:** critical **Type:** new

Identify local intertidal and subtidal ocean acidification and sea surface temperature refuges and resilient species

Stressor(s) Addressed By This Conservation Action

Temperature Extremes, Habitat Shifting or Alteration, Storms and Flooding

Conservation Action **Category:** Research **Biological Priority:** high **Type:** new

Encourage installation of lower cost SGCN-friendly infrastructure in and near subtidal, intertidal, and tidal marsh habitats through technology development and transfer of technology

Stressor(s) Addressed By This Conservation Action

Utility and Service Lines, Shipping Lanes, Roads and Railroads, Dams and Water Management-Use

Conservation Action **Category:** Research **Biological Priority:** high **Type:** on-going

Develop better understanding of climate change effects on intertidal and subtidal SGCN and ecosystem interactions

Stressor(s) Addressed By This Conservation Action

Lack of knowledge

Conservation Action **Category:** Research **Biological Priority:** high **Type:** on-going

Improve understanding of distribution, biology, and ecology of non-commercially harvested intertidal and subtidal SGCN

Stressor(s) Addressed By This Conservation Action

Lack of knowledge

Conservation Action **Category:** Research **Biological Priority:** high **Type:** on-going

Improve knowledge of intertidal and subtidal SGCN habitat use and migration patterns to better inform renewable energy project siting

SGCN and Conservation Actions Associated with Habitat Groupings

Habitat Grouping: Intertidal

Stressor(s) Addressed By This Conservation Action

Renewable Energy

Conservation Action	Category: Research	Biological Priority: high	Type: on-going
Improve modeling (at local and Gulf of Maine scales) of sea level rise effects on intertidal and subtidal SGCN habitats and incorporate into planning			

Stressor(s) Addressed By This Conservation Action

Temperature Extremes, Habitat Shifting or Alteration, Storms and Flooding

Conservation Action	Category: Research	Biological Priority: high	Type: on-going
Improve mapping of intertidal and subtidal habitats and include information on SGCN movements			

Stressor(s) Addressed By This Conservation Action

Renewable Energy

Conservation Action	Category: Research	Biological Priority: high	Type: on-going
Research the feasibility of diversifying Maine's marine fisheries of SGCN in response to changing environmental variables			

Stressor(s) Addressed By This Conservation Action

Storms and Flooding, Habitat Shifting or Alteration, Temperature Extremes

Conservation Action	Category: Research	Biological Priority: high	Type: on-going
Monitor coastal streams, rivers, and sediments for excessive nutrients and chemical therapeutants			

Stressor(s) Addressed By This Conservation Action

Agricultural and Forestry Effluents, Domestic and Urban Waste Water, Industrial and Military Effluents, Storms and Flooding

Conservation Action	Category: Research	Biological Priority: moderate	Type: on-going
Determine accuracy of commercial harvester- and dealer-reported landings and recreational fishing reports and surveys for target intertidal and subtidal SGCN and bycatch			

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action	Category: Research	Biological Priority: moderate	Type: on-going
Improve understanding of effects of energy development on bird and other SGCN use of migration corridors in intertidal and subtidal habitats			

Stressor(s) Addressed By This Conservation Action

Renewable Energy

Conservation Action	Category: Research	Biological Priority: moderate	Type: on-going
Improve understanding of intertidal and subtidal SGCN distributions especially in regards to ecosystem interactions and predator prey relationships			

Stressor(s) Addressed By This Conservation Action

Lack of knowledge

Conservation Action	Category: Research	Biological Priority: moderate	Type: on-going
Continue to work with industry to minimize escape of aquaculture-raised individuals			

Stressor(s) Addressed By This Conservation Action

Marine and Freshwater Aquaculture

Conservation Action	Category: Research	Biological Priority: moderate	Type: on-going
Investigate the effects of various harvesting practices on intertidal and subtidal SGCN habitats and on trophic and ecological processes			

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

SGCN and Conservation Actions Associated with Habitat Groupings

Habitat Grouping: Intertidal

Conservation Action **Category:** Survey and Monitoring **Biological Priority:** high **Type:** on-going
Develop monitoring systems and rapid response plans to prevent the colonization of invasive/problematic species and diseases in intertidal, subtidal, and tidal marsh habitats

Stressor(s) Addressed By This Conservation Action

Invasive Non-native-Alien Species-Diseases, Problematic Native Species-Diseases, Viral-Prion-induced Diseases

Conservation Action **Category:** Survey and Monitoring **Biological Priority:** high **Type:** on-going
Continue monitoring potential and active aquaculture sites with a focus on SGCN and important habitats

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action **Category:** Survey and Monitoring **Biological Priority:** moderate **Type:** on-going
More frequently update intertidal and subtidal SGCN habitat maps and compare to historical maps to monitor changes in distribution over time

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Species Conservation Actions:

Conservation actions that may benefit species associated with this habitat grouping can be found in Maine's 2015 Wildlife Action Plan: Element 1, Table 1-3. Click on the species of interest to launch a species based report summarizing relevant conservation actions and associated habitats.

The Wildlife Action Plan was developed through a lengthy participatory process with state agencies, targeted conservation partners, and the general public. The Plan is non-regulatory. The species, stressors, and voluntary conservation actions identified in the Plan complement, but do not replace, existing work programs and priorities by state agencies and partners.